

What is claimed is:

1 1. A method for real-time detection of wafer defects,
2 comprising the steps of:

3 providing a desired wafer before or after a
4 predetermined fabrication step and obtaining
5 optical information thereof; and

6 comparing and analyzing the optical information of the
7 desired wafer with corresponding reference
8 information for instantaneously detecting possible
9 wafer defects, wherein a predetermined action is
10 performed upon detection of wafer defects.

1 2. The method as claimed in claim 1, wherein an
2 optical detecting unit is used to detect the desired wafer
3 and obtaining optical information thereof, and a process
4 control unit is used for analyzing the optical information
5 of the desired wafer.

1 3. The method as claimed in claim 2, wherein the
2 optical detecting unit is an image capture device.

1 4. The method as claimed in claim 3, wherein the
2 image capture device is constituted by at least one charge-
3 coupled device (CCD) to gather film color information of the
4 desired wafer.

1 5. The method as claimed in claim 4, wherein the film
2 color information is compared with corresponding reference
3 film color information to instantaneously determine whether
4 wafer defects are present.

1 6. The method as claimed in claim 2, further
2 comprising the step of illuminating the desired wafer with
3 an inspection light during the step of obtaining optical
4 information about the desired wafer.

1 7. The method as claimed in claim 6, wherein the
2 optical detecting unit is an optical intensity measuring
3 device for gathering reflection intensity information from
4 the inspection light illuminating the desired wafer.

1 8. The method as claimed in claim 7, wherein the
2 reflection intensity on the desired wafer is compared with a
3 corresponding reference light intensity to instantaneously
4 determine whether defects are present.

1 9. The method as claimed in claim 2, wherein the
2 predetermined action comprising the step of halting the
3 subsequent fabrication steps of the desired wafer.

1 10. The method as claimed in claim 2, wherein the
2 predetermined action comprises the step of triggering an
3 alarm trigger to sound an alert signal.

1 11. A device for real-time detection of wafer defects,
2 comprising:

3 an optical detection device for detecting defects in a
4 desired wafer after different processes or before
5 processing for gathering optical information
6 thereof; and

7 a process control unit for comparing and analyzing the
8 optical information with corresponding reference
9 information to instantaneously detect possible
10 wafer defects, wherein a predetermined action is

11 performed by the process unit when detecting
12 possible wafer defects.

1 12. The device as claimed in claim 11, wherein the
2 detection unit is an image capture device.

1 13. The device as claimed in claim 12, wherein the
2 image capture device is constituted by at least one charge-
3 coupled device (CCD) to gather film color information of the
4 desired wafer.

1 14. The device as claimed in claim 13, wherein the
2 film color information is compared with corresponding
3 reference film color information to instantaneously
4 differentiate whether defects are detected.

1 15. The device as claimed in claim 11, further
2 comprising at least one light source to illuminate the
3 desired wafer with an inspection light.

1 16. The device as claimed in claim 15, wherein the
2 optical detecting unit is an optical intensity measuring
3 device for gathering reflection intensity information from
4 the inspection light illuminating the desired wafer.

1 17. The device as claimed in claim 16, wherein the
2 process control unit compares the reflection intensity with
3 a corresponding reference light intensity to instantaneously
4 determine whether possible defects are present.

1 18. The device as claimed in claim 11, wherein the
2 predetermined action performed by the process control unit
3 comprises the step of halting the subsequent process steps

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4 of the desired wafer when possible wafer defects are
5 detected.

1 19. The device as claimed in claim 11, further
2 comprising an alarm trigger to sound an alert signal by the
3 process control unit when possible wafer defects are
4 detected.